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A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

Contract has been awarded Westinghouse Electric Corp., Pittsburgh, by Navy Department, to furnish reactor components for nuclear-reactor-powered guided missile cruiser. The vessel, first nuclear-powered surface ship in the U.S. Navy, will be built by Bethlehem Steel Co. at its Quincy, Mass., yard. The component contract, as negotiated with Westinghouse, is on cost-plus-fixed-fee basis, in the amount of $18,335,305. (Other BIDS ASKED, CONTRACTS AWARDED, p. 3 this LETTER.)

New contract-operator of the USAEC's pantex Ordnance plant, Amarillo, Tex., will be Mason & Hanger - Silas Mason Co., New York. Procter & Gamble Defense Corp., operator of the plant since 1951, did not wish to continue there. (Other BUSINESS NEWS, p. 5 this LETTER.)

Premium price contract will be given Stanrock Uranium Mines, Canada, according to letter of intent Stanrock has received from Eldorado Mining & Refining, Ltd., covering purchase by Eldorado of uranium concentrates to a total value of $76,359,360. Stanrock, which was formed to operate Stancan Uranium Corp.'s holdings at Quirke Lake, in the Blind River district of Northern Ontario, has 90% of its 3 million issued shares held by Stancan. Shareholders of Stancan are to receive a stock dividend of one Stanrock share for each 10 shares of Stancan held at close of business Sept. 17, 1956. (Other FINANCIAL NEWS, p. 2 this LETTER.)

Students from overseas as well as from United Kingdom are enrolled in the U. K. Atomic Energy Authority's Harwell Reactor School, first course of which began last week. With a new and larger building, the School is now offering (for the first time since it began September, 1954) a six weeks' course concurrently with the standard three month course. This short course, which is actually the first six weeks of the standard course, is concerned mainly with the fundamental physical and engineering principles in reactor design. Technology, design studies, and details of particular reactor types are mainly dealt with in the full three months' course. (Other COURSES, MEETINGS, CONFERENCES, p. 3 this LETTER.)

Recently awarded U.S. patent grant covers technique for photochemical separation of isotopes, and results in enrichments of as much as 50 to 150 per cent. Utilization of its teachings may permit more economical processing and utilization of nuclear reactor fuels, according to Bruce Billings, who developed the technique, with W. J. Hitchcock and M. Zelikoff. The three are with Baird Associates-Atomic Instrument Co., Cambridge, Mass. (Other PATENT GRANTS, p. 4 this LETTER.)

Prime U.S. source of radioisotopes in bulk, Oak Ridge National Laboratory, Oak Ridge, has now completed its first ten years of processing and distributing work; the Laboratory now supplies 2700 users throughout the U. S. and 57 foreign countries, it has announced. Operated on a fixed-fee basis by Union Carbide Nuclear Co. (subsidiary of Union Carbide & Carbon) the Laboratory supplies the many commercial firms which purchase radioisotopes in bulk and reprocess them into such forms as labeled compounds, certified pharmaceuticals, and custom-manufactured radiation devices. (Other PRODUCT, PROCESS, SERVICES, p. 4 this LETTER.)

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ATOMIC ENERGY FINANCIAL NEWS...

FINANCING ARRANGED FOR URANIUM MINING FIRM:- Northspan Uranium Mines, Ltd., plans to raise $70 million of new money to finance the completion of its uranium mines and mills in the Blind River area, Ontario, according to J. B. Aird, president. Northspan, operating under the supervision of Rio Tinto Mining Co. of Canada, Ltd., holds letter of intent from Eldorado Mining & Refining for purchase of $240 million of uranium concentrates. Of the total financing, the company will borrow $45 million by the placement of bonds privately through Morgan Stanley & Co., and Model, Roland & Stone, New York. The bonds will carry detachable stock purchase warrants. The remaining $25 million will be supplied by a loan from Chase Manhattan Bank, and The Canadian Bank of Commerce. This loan will be secured by the company's first mortgage bonds. (Northspan, an amalgamation of three Blind River companies, will erect mills for each mine with an aggregate capacity of 9,000 tons of uranium ore per day. Production is expected within 12-months.)

MUTUAL FUND IN ATOMIC FIELD NOW USING NEW MANAGEMENT ORGANIZATION:- Atomic Development Management Corp. is now performing management of affairs of Atomic Development Mutual Fund, Inc. Capital stock of the Management Corp. is held by Newton I. Steers, Jr., and Merle Thorpe, Jr., who also own all capital stock of Atomic Development Securities Co., Inc., distributors of the stock. Quarterly fee of .055 of one percent of average net assets of the Fund (approximately $43 million) is being paid for the management function. With establishment of the Management Corp., fees paid by the Fund to its investment adviser (Auchincloss, Parker & Redpath), and to its technical adviser (Nuclear Development Corp. of America), have been reduced; operating costs of the Fund have not been increased. (For the period June 30, 1955-June 30, 1956 the Fund showed a net asset gain of 35¢ per share. During that period, more shares were redeemed than were sold, resulting in a decrease of 181,064 shares of those outstanding June 30, 1956.)

NUCLEAR DEVELOPMENTS...and research projects...

ELECTRONIC COMPONENTS SUBJECTED TO HIGH-INTENSITY IONIZING RADIATION:- Electronic components, normally used in nuclear power reactor controls, were subjected to high-intensity nuclear radiation and high temperatures for more than 1,000 hours and still functioned properly, a General Electric Co. spokesman said in New York last week. G. W. Newton, of GE's aircraft nuclear propulsion department, Evendale, Ohio, said that GE had conducted the experiments after finding that many materials susceptible to heat damage (under 932 deg.F.) also are susceptible to damage from nuclear radiation.

The experiment consisted in placing a multivibrator and a cathode follower in a radiation port of an Oak Ridge nuclear reactor. Since June of this year the components had been subjected to 90% of the maximum reactor radiation and to temperatures ranging up to 842 deg. F. Mr. Newton explained that oscilloscope patterns of output signals from the two assemblies indicated they were functioning properly during the 1,000-hour test period. (In another development in this field, Mr. Newton observed that GE's specialty component motor department has constructed a motor of radiation-resistant materials which is capable of high temperature operation. The motor was run at 500-deg. C. for some 50-hours, he noted.)

GAMMA RAY SOURCES BEING RENTED:- Irradiated fuel elements from the USAEC's materials testing reactor at Idaho Falls, Idaho, will now be rented by the Commission for a flat charge of $100 per year per element, which is also the minimum charge, plus $450 handling charge for four elements, and plus $10 per day rental charge for shipping cask to hold four elements. The spent fuel elements are available after 90-days cooling. At that time each element has an initial gamma radiation rate of approximately 200,000 roentgens per hour. Values of gamma decay and radiation rates from these elements, their physical dimensions, etc., are in report IDO-16247 available from Office of Technical Services, Wash. 25, D.C.

NUCLEAR ROCKETRY UNDER STUDY:- Nuclear rocket propulsion studies have been underway for "something more than a year" at Los Alamos Scientific Laboratory, N.M., according to Raemer Schreiber who heads the N Division there. Funds for expansion and intensified effort on nuclear rocket propulsion were provided by a $15 million supplemental appropriation for the USAEC granted in closing hours of last session of Congress. In addition to this work at Los Alamos, nuclear rocketry is under study also at the Radiation Laboratory at Livermore, Calif.

BIDS ASKED, CONTRACTS AWARDED...on nuclear projects...

BIDS ASKED:- Construction work, including non-nuclear portions of the reactor system, is now open to bidding at the SPERT III area of the national reactor testing station, USAEC, Idaho Falls, Idaho, under contract no. AT(10-1)-849. The SPERT III (special power excursion reactor test) facility will permit reactor kinetics studies under pressurized conditions. It and SPERT I, now in operation at the testing station, are part of a reactor study to demonstrate experimentally safe top operating limits, to discover points of design weakness, and to learn what inherent safety mechanisms contribute most to reactor self-safety so as to capitalize on them. Work on SPERT III (as now open to bids) is expected to cost approximately $1 million and will include construction of a 59- by 80-ft. reactor building; construction of the non-nuclear portions of the reactor system including process piping, heat exchangers, etc.; and preparation of site facilities.

CONTRACTS AWARDED:- Contract for design, fabrication and erection of a utility test loop has been awarded Catalytic Construction Co., Philadelphia, Pa., by Brookhaven National Laboratory, Upton, N. Y. The test loop, circulating molten bismuth, will be used to test heat exchangers, controls and instrumentation as part of Brookhaven's liquid metal fuel reactor program. Completion of the project is expected by Spring, 1957.

Twenty-five new physical research contracts and sixty-three renewals, have been awarded by the USAEC to private research organizations and U. S. universities. New contract awards to private firms include $46,996 to Horizons, Inc., for a study of the electrolytic extraction of niobium, while renewals include a grant of $75,000 to General Electric Co. for fundamental metallurgical research. Largest few grants to an educational institution were $77,020 to Massachusetts Institute of Technology for three research studies; while largest renewal grant was $474,000 to University of Michigan for study of high energy nuclear reactions.

RAW MATERIALS...prospecting, mining marketing...

UNITED STATES:- New Mexico-New 1½ million ton high-grade uranium ore body has been discovered in New Mexico by Phillips Petroleum Co., the firm said in New York last week. The company said the discovery followed intensive core drilling on a 1,280 acre mining lease in the Ambrosia Lake area near Grants, N.M. Phillips is acquiring full working interest in the lease by purchasing the remaining one-quarter interest previously held by Holly Minerals, Inc.

Sabre Pinon Uranium Corp. has now signed contract with the USAEC for that agency to purchase uranium concentrates produced from its ores. With this guaranteed market, Sabre Pinon will erect a 1,500 tons/day ore processing mill in McKinley County, N.M., estimated to cost some $14 million. (A dissident group of Sabre Pinon stockholders has filed a brief with Attorney General through counsel complaining against an agreement Sabre Pinon has with American Metals Co., Ltd. Under the agreement, American Metals would be cosigner with SP for $12 million in loans; would assist with engineering help in constructing the uranium plant; and would buy 25% interest in SP. The stockholders claim that this would increase American Metal's alleged domination of the uranium industry.)

MEETINGS, COURSES, CONFERENCES...on nuclear subjects...

MEETINGS:- Third annual ASME-ASLE Lubrication Conference, Atlantic City, N.J., Oct. 8-10, 1956 will have two sessions devoted to bearing and lubricant problems in nuclear power plants. Sessions will hear Application Problems with Petroleum Lubricants in Nuclear Power Plants; General Radiation Damage Problems for Lubricant-and Bearing-Type Materials; Use of Rolling Contact Bearings in Low Viscosity Liquid Metal Lubricants; and other papers on Radiation Resistant Greases, and Effects of Nuclear Radiation on Lubricants.

COURSES:- Two new USAEC educational programs are designed to increase the U.S. supply of engineers, scientists and technicians with nuclear training. Under one program, the USAEC will make grants of not more than $350,000 each to educational institutions for acquiring equipment for course work dealing with nuclear technology. The other program will make available to schools materials such as uranium trioxide, uranium tetrafluoride, uranium metal slugs, uranium metal billits, etc. These materials will be loaned, and the value of the materials loaned to any institution is limited to $50,000.00.

ATOMIC ENERGY PATENT DIGEST...latest industrial grants...

PATENT GRANTS TO PRIVATE INDIVIDUALS AND/OR ORGANIZATIONS:- Method of producing a thorium tetrahalide other than the tetrafluoride. U. S. Pat. No. 2,762,684 issued Sept. 11, 1956; assigned to Horizons Titanium Corp., Princeton, N.J. (Inventor: Eugene Wainer.)

Method of recovering uranium from aqueous sulfate solutions. U. S. Pat. No. 2,762,685 issued Sept. 11, 1956; assigned to Ekstrand & Tholand, Inc., New York, N. Y. (Inventor: Nils H. Brundin, Hoganas, Sweden.)

Method of producing tetrahalides (other than the tetrafluorides) of zirconium and hafnium. U. S. Pat. No. 2,762,688 issued Sept. 11, 1956; assigned to Horizons Titanium Corp., Princeton, N.J. (Inventor: Eugene Wainer.)

Fertilizer manufacture and uranium recovery. U. S. Pat. No. 2,762,698 issued Sept. 11, 1956; assigned to Monsanto Chemical Co., St. Louis, Mo. (Inventor: Marion D. Barnes.)

PATENT GRANTS TO GOVERNMENTAL ORGANIZATIONS:- Process for production of uranium hexafluoride. U. S. Pat. No. 2,761,756 issued Sept. 4, 1956; assigned to United States of America (USAEC). (Inventor: Homer F. Priest.)

Process of recovering metallic uranium values. U. S. Pat. No. 2,761,757 issued Sept. 4, 1956; assigned to United States of America (USAEC). (Inventors: Martin D. Kamen, Abel De Haan, Jr.)

Recovery of uranium from an acidic phosphatic solution. U. S. Pat. No. 2,761,758 issued Sept. 4, 1956; assigned to United States of America (USAEC). (Inventors: Ray S. Long, Richard H. Bailes.)

Method of improving performance characteristics of positive ion electrostatic accelerator. U. S. Pat. No. 2,762,941 issued Sept. 11, 1956; assigned to United States of America (USAEC). (Inventor: Clarence M. Turner.)

PRODUCTS, PROCESSES & SERVICES...in the nuclear field...

PRODUCTS:- "Mass production" of small, portable nuclear research reactors is now underway at Aerojet-General Nucleonics, San Ramon, Calif. Two a month production has been initiated of these reactors, which use 600 grams of 20% enriched uranium oxide particles embedded in a radiation-stabilized polyethylene moderator as critical mass. Since fission products are sealed within the solid core, the problem of waste disposal and the possibility of radioactive contamination are eliminated. Instrumentation of the AGN-201, as this model is known, is similar to that on the largest nuclear reactors. Four access ports, and a glory hole, in additional to the central vertical thermal column are provided. Aerojet-General provides customer service in USAEC licensing, and training of reactor personnel to purchasers of the reactor.

SERVICES:- One of the largest isotope-using radiographic services, Isotope Products, Inc., of Buffalo, N.Y., is now enlarging its testing service. The firm, which has over a dozen radiographic trailers with portable gamma radiography units using iridium-192 and cobalt-60 as sources, is offering X-ray radiography for nondestructive testing of thin steel and light metal sections, where no gamma emitting isotope can be used satisfactorily. The company is also doing magnetic and ultrasonic inspection, with newly acquired equipment for that purpose.

NOTES:- Properties of the rare earths are outlined in a brochure prepared by St. Eloi Corp., Newtown, Ohio, producers of rare earths.

Facilities of the materials testing reactor being built by Westinghouse Electric Corp., and scheduled for operation next year, are explained in booklet available from Westinghouse, P.O. Box 1075, Pittsburgh, Pa.

PEOPLE...in atomic energy work...

Emerson S. Norris is the new manager of facilities engineering for the atomic energy division of Sylvania Electric Products, Inc., Bayside, L. I. N. Y.

D. R. Berg has been appointed project manager for Dravo Corporation's nuclear power plant contract with Westinghouse Electric Corp. at Duquesne Light Company's atomic power plant in Shippingport, Pa.

Massoud Simnad has joined the staff of the general atomic division of General Dynamics Corp., San Diego, Calif. Dr. Simnad is internationally known for his work in metallurgy.

ATOMIC ENERGY BUSINESS NEWS...

REACTOR GRADE BERYLLIUM TO BE SUPPLIED:- Brush Beryllium Co., Cleveland, and Beryllium Corp., Reading, Pa., have each been awarded a $23.5 million contract to supply the USAEC with 1 million lbs. (each firm supplying half) of reactor-grade beryllium metal over a five year period starting Jan. 1, 1958. Price of this grade beryllium over the five year period will average $47/lb.; current price in small amounts is around $104/lb. When the USAEC first established its beryllium procurement early this year, it had sought 500,000-lbs. of the metal. It is believed that an accelerated phase of nuclear work, possibly the nuclear aircraft program, may be responsible for the doubling of the USAEC's intended purchase of the metal, since beryllium is a light weight moderator for nuclear reactors.

Both Brush and Beryllium Corp. will build new plants to produce the metal. Brush will immediately start construction of a new plant between Elmore and Oak Harbor, Ohio, adjacent to its present beryllium copper alloy division located there. Beryllium Corp. will start construction at once on a $4 million plant on the site of the former Ashmore Shops of the Lehigh Valley Railroad, near Hazelton, Pa., with the new facility becoming the nuclear division of the company, which is headquartered at Reading, Pa. Brush will obtain funds for the new plant, including additional working capital, through a bank line of credit and an offering of 400,000 shares of common stock. Kuhn, Loeb & Co., and McDonald & Co., head the underwriting group offering the stock, of which 375,000 shares will be sold to the public and 25,000 shares to present stockholders. Brush is at present the only industrial producer of reactor grade beryllium metal, and is currently operating the USAEC's facility at Luckey, Ohio, for that purpose; this facility will be placed on stand-by status when commercial sources start supplying beryllium. The company is also the only industrial fabricator of pure beryllium metal parts for atomic energy applications, with fabrication plant in Cleveland, Ohio. Its production of beryllium metal, its alloys, and compounds are under company-owned patents and processes developed during the past thirty years.

PROPOSALS FOR MANUFACTURE OF URANIUM SALTS EXPECTED:- With deadline Oct. 1st, USAEC's invitation to U. S. industrial firms to submit proposals for manufacture of uranium salts is expected to result in proposals from about 12 firms. Of proposals submitted, from among the 32 firms which showed interest, joint proposal has been made by Koppers Co., Inc., and Kennecott Copper Co. These firms estimate the project (to prepare 5,000 tons per year of uranium salts for the USAEC's feed materials program) would cost $50 million; they propose to divide cost equally between the two firms. (Kennecott has been doing research for some time on uranium feed materials at its Salt Lake City research center, and reportedly has been investigating between 25 and 30 different approaches to salt production.)

BOOKS, PUBLICATIONS & FILMS...on nuclear subjects...

PUBLICATIONS:- X-ray Powder Data for Uranium. Geological Survey bulletin No. 1036-G (25¢)..... Accelerating Civilian Reactor Program. Hearings before 84th Congress, 2nd Session, May 23-29, 1956. 545 pages. ($1.50). --Superintendent of Documents, Wash. 25, D. C.

FILMS:- The Petrified River--Story of Uranium. Popular account of uranium exploration, and applications of atomic energy. Sponsored by Union Carbide & Carbon Corp. in cooperation with U. S. Bureau of Mines. 16mm., with sound track. Running time: 28 min. Prints may be borrowed by responsible organizations from: Graphic Services Sect., U.S. Bureau of Mines, Experiment Sta., 4800 Forbes St., Pittsburgh 13, Pa.

NOTES:- Ionizing Radiations--In Food Products Manufacture, a simplified account for the food products trade, is one of a series of twenty-five articles being run by Western Canner & Packer on food products manufacture. Appearing in the August, 1956 issue, the article was prepared by Wolfgang Huber, consultant. Dr. Huber may be reached at 68 Bret Harte Terr., San Francisco, Calif., for further details.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

September 18, 1956